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Executive Office of Health and Human Services  
Department of Public Health  
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**MEMORANDUM**

To: Commissioner Monica Bharel and Members of the Public Health Council

From: Bernard Plovnick, Director, Determination of Need Program

Through: Deborah Allwes, Bureau Director, Health Care Safety and Quality

Subject: Steward St. Elizabeth's Medical Center of Boston  
Approved DoN Project No. 4-3B98  
Request for significant change to expand project scope

Date: April 8, 2015 (Issued April 1, 2015)

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**I. Introduction**

The purpose of this memorandum is to present for Public Health Council action a request by Steward St. Elizabeth's Medical Center of Boston, Inc. ("St. Elizabeth's" or "Hospital") for a significant change to its approved but not fully implemented DoN Project Number 4-3B98. The original project involved new construction and renovation of the Connell Building on the main hospital campus to accommodate a consolidated and expanded Critical Care Unit. The project was subsequently amended to construct an additional floor of shell space to provide for the future replacement of adult medical/surgical beds. St. Elizabeth's now seeks to undertake the build-out of the 6<sup>th</sup> floor shell space to create a 20-bed adult medical/surgical unit and an 8-bed intensive care unit. In addition, the Hospital seeks to create two new operating rooms and related support functions in space vacated by the relocation of the surgical intensive care unit in an earlier phase of the project. As proposed, the request for significant change would increase the maximum capital expenditure ("MCE") of the project from \$36,082,475 (October 2013 dollars) to a proposed MCE of \$52,550,902 (August 2014 dollars).

**II. Background**

St. Elizabeth's attributes recent and projected growth in its patient service volume to its role as the tertiary referral hospital for the Steward Health Care Network. This DoN project, amended three times since its original approval in 2011, has sought to improve the facility's capacity to serve the growing demand for tertiary level services with significant improvements to its critical

care and medical/surgical units as well as to its surgical services. The following is a chronology of events relating to the current request for significant change:

July 13, 2011 – PHC approved DoN Project No. 4-3B98 for construction of a single floor addition (fifth floor) above the four-story Connell Building to accommodate a consolidated 23-bed critical care unit (“CCU”) to replace 27 existing intensive care and step-down unit beds. The approval included 2,730 GSF of shell space for the development of up to five additional CCU beds in the future and the approved MCE was \$18,093,255 (April 2011 dollars).

June 13, 2012 - PHC approved an amendment for significant change for an additional floor of shell space (sixth floor) above the approved but not yet constructed CCU floor to accommodate the future replacement of 30 medical/surgical beds. This amendment increased the approved new construction by 28,696 GSF, from 47,067 to 75,763 total GSF (including 23,085 GSF of shell space) and increased the MCE of the project from \$18,093,255 (April 2011 dollars) to \$25,008,921 (March 2012 dollars).

August 14, 2013 – PHC approved an amendment for significant change to build out 2,730 GSF of approved shell space on the fifth floor of the Connell Building to accommodate five additional CCU beds and associated support functions as well as to undertake construction of mechanical infrastructure associated with the future build-out of the sixth floor of the building. As approved, the significant change increased the MCE of the project from \$25,008,921 (March 2012 dollars) to \$29,231,960 (June 2013 dollars).

February 13, 2014 – PHC approved an amendment for significant change to add renovations encompassing 22,406 GSF on the third floor of the Seton Pavilion, utilizing space to be vacated by the existing cardiac and respiratory critical care units to permit the relocation of the existing PACU to free up space for the construction of two additional operating rooms in the surgical suite. Also approved were renovations to accommodate the relocated PACU within a consolidated preparation and recovery suite for the staging of both inpatient and ambulatory surgical cases in space vacated by two relocated critical care units as well as space currently occupied by ambulatory surgery preparation and recovery. As approved, the significant change increased the MCE of the project from \$29,231,960 (June 2013 dollars) to \$36,082,475 (October 2013 dollars).

August 8, 2014 – St. Elizabeth's filed the current request for significant change. As noted earlier, the significant change as requested would increase the MCE of the project from the previously approved MCE of \$36,082,475 (October 2013 dollars) to a proposed MCE of \$52,550,902 (August 2014 dollars), representing an increase in MCE of \$16,468,427 (45.6%).

### III. Staff Analysis

According to St. Elizabeth's, plans for building out the shell space and for renovation of space vacated by functions relocated in earlier phases of the project were the result of an ongoing planning process. The Hospital maintains that the proposed modifications will improve its management of the quality and costs of care provided at the hospital and in the Steward network.

## 1. Additional Bed Capacity

As amended in 2012, the project was expanded to permit construction of an additional floor of shell space (6<sup>th</sup> floor) to accommodate a future 30-bed medical/surgical unit above the approved 5<sup>th</sup> floor expansion of the Connell Building that accommodates the newly constructed critical care units. The Hospital now proposes to build out the shell space to accommodate two units on the sixth floor: a 20-bed adult medical/surgical unit and an 8-bed intensive care unit. The additional beds will increase the Hospital's medical/surgical bed complement from 128 to 148 beds and its ICU bed complement from 28 to 36 beds.

St. Elizabeth's serves as the tertiary referral hospital for the Steward Health Care System. The recruitment of additional specialty physicians, notably cardiac surgeons, as well as plans to establish a complex neurosurgery program reflect the investment of resources to build capacity at St. Elizabeth's for treatment of more complex cases within the Steward Network. The Hospital has already begun to experience an increase in service utilization due in large part to Steward ACO patients referred for complex care and anticipates that the volume of referrals will continue to increase in the future.

### A. Medical/Surgical Beds

The proposed 20-bed unit will increase the supply of single-bed medical/surgical rooms from 32 to 52 and will permit St. Elizabeth's to operate at a higher level of occupancy. The Hospital reported that utilization of its medical/surgical beds increased by more than 11% in 2014 after remaining relatively flat for the three previous years.

Assuming an annual growth rate for patient days of 2% per year, the Applicant projected the utilization of the proposed 148 medical/surgical beds as follows:

	<u>Patient Days</u>	<u>% Change</u>	<u>Occupancy</u>	<u>% Change</u>	<u>ADC</u>	<u>% Change</u>
2016	34,746		64%		95.20	
2017	35,441	2.00%	66%	2.00%	97.10	2.00%
2018	36,150	2.00%	67%	2.00%	99.04	2.00%
2019	36,873	2.00%	68%	2.00%	101.02	2.00%

### B. ICU Beds

According to St. Elizabeth's, ICU volume has grown steadily over the past four years, faster than previously projected and due primarily to a significant increase in patient transfers from other hospitals. In the first two months of 2015, the Applicant reported receiving over 15 transfers per month. The Hospital noted that cardiac surgery volume has exceeded previous projections and expects that the establishment of a comprehensive neurosurgery program will add to the demand for ICU capacity in the future. Utilization statistics for the proposed 36 ICU beds, assuming growth in demand of 10% per year, was projected as follows:

	<u>Patient Days</u>	<u>% Change</u>	<u>Occupancy</u>	<u>% Change</u>	<u>ADC</u>	<u>% Change</u>
2016	7,918		60%		21.69	
2017	8,710	10.00%	66%	10.00%	23.86	10.00%
2018	9,581	10.00%	73%	10.00%	26.25	10.00%
2019	10,539	10.00%	80%	10.00%	28.87	10.00%

Based upon the increased demand for beds experienced by St. Elizabeth's in recent years and factors suggesting continued growth in the near future, Staff finds the Hospital's plan for increasing both medical/surgical and ICU bed capacity to be reasonable.

## 2. Additional Surgical Capacity

As noted earlier, a significant change was approved on February 13, 2014 for St. Elizabeth's to expand its complement of operating rooms from 11 to 13 based largely upon continued growth in the volume of cardiac surgery performed at the Hospital. The Hospital now plans to establish a comprehensive neurosurgery program and seeks to construct two additional operating rooms to accommodate the projected volume of neurosurgery cases that have previously been sent to hospitals outside of the Steward Network. The two proposed operating rooms would be located in the Seton Pavilion in space recently vacated by the surgical intensive care unit and contiguous to the existing surgical suite. The new operating rooms, one of which would be an interventional, or "bi-plane" room specially equipped for the delivery of neurosurgical procedures, would be appropriately sized (760 GSF) for complex neurosurgical procedures. Their addition would increase the complement of operating rooms at St. Elizabeth's to 15.

Data submitted by the Hospital reflects steady growth in the volume of surgical procedures performed from 2010 to 2014, with the exception of neurosurgery. For the three projected years following full implementation of the project, the Hospital has projected growth for all major categories of surgery. An analysis by Staff of the actual and projected annual increase (decrease) in surgical procedures is summarized below in Table 1:

Table 1: Average Annual Increase (Decrease) in Surgical Procedures, 2010-2014 and Projected Years 1-3

	Average annual increase, 2010 to 2014		Projected Annual increase, Projected Years 1-3	
	N	%	N	%
Cardiac Inpatient	71	22.66%	69	10.51%
Vascular Inpatient	41	15.06%	15	4.78%
Neurosurgery Inpatient	(22)	(19.60%)	18	9.14%
All Other Inpatient	30	1.93%	113	4.76%
Total Inpatient	121	4.76%	218	6.10%
Outpatient	81	3.15%	223	4.76%
All Surgical Procedures	202	3.91%	441	5.34%

As shown, surgical volume has grown since 2010 by an average annual rate of 3.91%, or 202 procedures per year, with the most significant growth occurring in cardiac and vascular inpatient procedures. The Hospital's 5.34% projected average annual growth rate over Projected Years 1-3 assumes in the range of 9-10% annual growth in cardiac and neurosurgery, and an annual increase of approximately 5% in all other inpatient surgery and all outpatient surgery. Based upon the Hospital's recent experience and its plan to expand neurosurgery, Staff found the growth assumptions to be reasonable.

The impact of the projected increase in surgical volume upon the Hospital's operating room ("OR") capacity was calculated by Staff using surgical minutes reported by the Hospital and assuming that each OR is routinely available and staffed for use eight hours a day with an allowance of 30 minutes of downtime for each procedure to account for room preparation and cleaning. According to several studies in the health care literature, 85% is considered to represent the optimal utilization of an operating room suite. As shown in Table 2, the projected surgical volume would result in overall operating room utilization of 91% for the existing 13-room suite and 79% for the proposed 15-room suite.

Table 2: Projected Operating Room Utilization

			<u>13 OR's</u>		<u>15 OR's</u>	
	<u>Surgical Minutes</u>	<u>Total OR Minutes<sup>1</sup></u>	<u>Hrs./OR/day<sup>2</sup></u>	<u>Percent Capacity</u>	<u>Hrs./OR/day<sup>2</sup></u>	<u>Percent Capacity</u>
Proj. Yr. 1	1,081,499	1,308,862	6.88	86%	5.96	74%
Proj. Yr. 2	1,113,944	1,348,775	7.08	89%	6.14	77%
Proj. Yr. 3	1,147,363	1,410,913	7.29	91%	6.32	79%

Staff analyzed the projected increased operating room utilization broken down by inpatient and outpatient surgery to determine how much each contributed to the demand for additional operating room capacity. Table 3 shows that approximately two-thirds of the projected increase in surgical minutes will be attributable to surgery performed on an inpatient basis, supporting the Hospital's claim that the additional ORs are needed primarily to meet increased volume in inpatient surgery.

Table 3: Increase in Surgical Minutes for Inpatient and Outpatient Surgeries

	<b>2013</b>	<b>2014</b>	<b>Projected Year 1</b>	<b>Projected Year 2</b>	<b>Projected Year 3</b>
Increase in Total Surgical Minutes	54,257	18,472	65,321	62,075	66,271
Percent Inpatient	122.99%	176.88%	69.78%	66.55%	66.99%
Percent Outpatient	-22.99%	-76.88%	30.22%	33.45%	33.01%

<sup>1</sup> Includes 30 minutes room prep time per procedure

<sup>2</sup> Based upon 248 scheduled days per year

Based upon the foregoing analysis, Staff finds the proposed increase in surgical capacity to be reasonable and primarily attributable to a growth in demand for inpatient surgery.

#### C. Changes to Approved MCE and GSF

The proposed significant change involves build out of all the remaining 21,058 GSF of shell space on the 6<sup>th</sup> floor of the Connell Building and renovation of an additional 3,637 GSF of existing space in the Seton Pavilion to create two new operating rooms. The Applicant also seeks to correct an error in an earlier amendment request that inadvertently under-reported the amount of shell space by 703 GSF. This will increase the total GSF of new construction for the project to from 73,900 to 74,603. These changes are summarized below:

	New Construction GSF	Renovation GSF	Total Project GSF
Approved 2-13-2014	73,900	24,269	98,169
Proposed changes	<u>703</u>	<u>3,637</u>	<u>4,340</u>
Requested Totals	74,603	27,906	102,509

The proposed significant change would result in a revised renovation cost of \$362.46/GSF (August 2014 dollars), which compares favorably with the Marshall & Swift cost estimate of \$421.41<sup>3</sup> (60% of \$702.34). Based upon this analysis, Staff finds the proposed square footage and construction costs to be reasonable.

#### IV. Staff Recommendation

Based upon the above analysis and findings, Staff recommends approval with conditions of the amendment to approved DoN Project No. 4-3B98 to build out 21,058 GSF of shell space on the 6<sup>th</sup> floor of the Connell Building resulting in the addition of 20 adult medical/surgical beds and 8 intensive care unit beds. The additional beds will increase the Hospital's medical/surgical bed complement from 128 to 148 beds and its ICU bed complement from 28 to 36 beds. Further, Staff recommends approval of 3,637 GSF of additional renovations to the Seton Pavilion to permit the addition of two new operating rooms increasing the capacity of the surgical service from 13 to 15 operating rooms. The recommended MCE of \$52,550,902 (August 2014 dollars) is itemized as follows:

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<sup>3</sup> Based upon 60% of applicable construction cost of \$702.24/GSF (August 2014 dollars)

	<u>New Construction</u>	<u>Renovation</u>	<u>Total</u>
Construction Contract	\$35,560,468	\$9,214,286	\$44,774,754
Fixed Equipment not in Contract	462,267	0	\$462,267
Architect. & Engineering	2,874,621	903,223	\$3,777,844
Pre-filing Planning & Development	113,628	100,385	\$214,013
Post-filing Planning & Development	40,069	20,216	\$60,285
Other (A): IT and Biomedical Network AV, Security, Call Stations, Low Voltage, Equipment Planning	1,250,618	521,057	\$1,771,675
Other (B): Moving, Cleaning, Builder's Risk Coverage, Signage, Hazardous Materials Abatement	1,387,830	102,234	\$1,490,064
Net Interest Expense During Construction	0	0	\$0
Major Movable Equipment	0	0	\$0
Total Construction Costs	\$41,689,501	\$10,861,401	\$52,550,902

The recommended approval of this significant change amendment is subject to the following conditions:

1. St. Elizabeth's shall accept the maximum capital expenditure of \$52,550,902 (August 2014 dollars) as the final cost figure except for those increases allowed pursuant to 105 CMR 100.751 and 100.752.
2. St. Elizabeth's shall provide an additional \$823,421, or \$164,684 per year over five years, in support of community and regional health improvement programs ("CHI"). This revised contribution is based upon 5% of the requested increase in the maximum capital expenditure of \$16,468,427 (August 2014 dollars), resulting in a total CHI obligation of \$2,627,545 for this project. The additional funds shall be allocated to programs based upon identified needs as determined through a process involving the Boston Alliance for Community Health (CHNA 19 ), the Boston Public Health Commission, St. Elizabeth's, the Office of Community Health Planning, and other planning partners.
3. As amended, the approved project scope shall encompass 74,603 GSF of new construction and 27,906 GSF of renovations.
4. All other conditions attached to the original approval and previous amendments of this project shall remain in effect.